

WHAT IS CLAIMED IS:

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1. A recording condition determining method realized in an information recording apparatus that records information on an information recording medium using an optical beam emitted from a light source, the method comprising:

10 a first step of determining whether an optimal recording power of the light source is greater than a preset threshold value based on at least one of a result of test writing on the information recording medium and a result of receiving reflected light from the information recording medium during 15 recording;

a second step of selecting according to a predetermined selection criterion at least one of a plurality of choices including a choice of not changing the optimum recording power, said second step being realized when it is determined in the 20 first step that the optimum recording power exceeds the threshold value; and

a third step of establishing a recording condition based on the selected choice.

2. The recording condition determining method as claimed  
in claim 1 wherein the selection criterion corresponds to a  
5 criterion of selecting the choice of not changing the optimum  
recording power if an estimation of an influence on a service  
life of the light source does not exceed a predetermined level.

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3. The recording condition determining method as claimed  
in claim 2, wherein the influence on the service life of the  
light source is estimated based on at least one of an amount of  
15 data to be recorded, an amount of time required for recording,  
and hysteresis information pertaining to recording power and  
recording time of a past recording.

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4. The recording condition determining method as claimed  
in claim 1, wherein:  
the first step includes determining whether the optimum  
25 recording power exceeds the threshold value based on the result

of test writing on the information recording medium; and  
the choices further include at least one of a choice of  
obtaining a new optimum recording power by lowering a recording  
speed and conducting the test writing once more and a choice of  
5 changing the optimum recording power to a predetermined value  
in the vicinity of the threshold value.

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5. The recording condition determining method as claimed  
in claim 1 wherein:

the first step includes determining whether the optimum  
recording power exceeds the threshold value based on the result  
15 of receiving reflected light from the information recording  
medium during recording; and

the choices further include a choice of lowering the  
optimal recording power by one rank.

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6. The recording condition determining method as claimed  
in claim 1, wherein the selection criterion corresponds to a  
25 preset criterion.

5        7. The recording condition determining method as claimed  
in claim 1, wherein the selection criterion corresponds to a  
criterion set according to an external input.

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8. The recording condition determining method as claimed  
in claim 6, wherein the selection criterion corresponds to a  
criterion for selecting one of the choices including the choice  
15 of not changing the optimum recording power and at least one of  
a choice of obtaining a new optimum recording power by lowering  
a recording speed and conducting the test writing once more, a  
choice of changing the optimum recording power to a  
predetermined value in the vicinity of the threshold value, and  
20 a choice of lowering the optimum recording power by one rank.

25        9. The recording condition determining method as claimed

in claim 7, wherein the selection criterion corresponds to a criterion for selecting one of the choices including the choice of not changing the optimum recording power and at least one of a choice of obtaining a new optimum recording power by lowering 5 a recording speed and conducting the test writing once more, a choice of changing the optimum recording power to a predetermined value in the vicinity of the threshold value, and a choice of lowering the optimum recording power by one rank.

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10. The recording condition determining method as claimed in claim 1, further comprising:

15 a fourth step of storing hysteresis information including the optimum recording power and a light emission time of the light source at said optimum recording power, said fourth step being performed when the choice of not changing the optimum recording power is selected according to the selection 20 criterion in the second step.

25 11. A program implemented in an information recording

apparatus that is adapted to record information on an information recording medium using an optical beam emitted from a light source, said program running on a control unit of the information recording apparatus to execute:

5       a first procedure of determining whether an optimal recording power of the light source exceeds a preset threshold value based on at least one of a result of test writing on the information recording medium and a result of receiving reflected light from the information recording medium during  
10 recording;

          a second procedure of selecting according to a predetermined selection criterion at least one of a plurality of choices including a choice of not changing the optimum recording power, said second procedure being realized when it  
15 is determined in the first procedure that the optimum recording power exceeds the threshold value; and

          a third procedure of establishing a recording condition based on the selected choice.

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12. The program as claimed in claim 11, wherein the selection criterion corresponds to a criterion of selecting the  
25 choice of not changing the optimum recording power if an

estimation of an influence on a service life of the light source does not exceed a predetermined level.

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13. A computer readable storage medium storing a program implemented in an information recording apparatus that is adapted to record information on an information recording 10 medium using an optical beam emitted from a light source, said program running on a control unit of the information recording apparatus to execute:

a first procedure of determining whether an optimal recording power of the light source exceeds a preset threshold 15 value based on at least one of a result of test writing on the information recording medium and a result of receiving reflected light from the information recording medium during recording;

a second procedure of selecting according to a 20 predetermined selection criterion at least one of a plurality of choices including a choice of not changing the optimum recording power, said second procedure being realized when it is determined in the first procedure that the optimum recording power exceeds the threshold value; and

25 a third procedure of establishing a recording condition

based on the selected choice.

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14. An information recording apparatus that is adapted to record information on an information recording medium using an optical beam emitted from a light source, said apparatus comprising:

10 recording power obtaining means for obtaining an optimal recording power of the light source based on at least one of a result of test writing on the information recording medium and a result of receiving reflected light from the information recording medium while recording information;

15 determination means for determining whether the optimum recording power exceeds a preset threshold value;

selection means for selecting according to a predetermined selection criterion at least one of a plurality of choices including a choice of not changing the optimal recording power,  
20 said selection means being realized when it is determined by the determination means that the optimal recording power exceeds the threshold value; and

establishing means for establishing a recording condition based on the selected choice.

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15. The information recording apparatus as claimed in  
5 claim 14, further comprising:

first storage means in which hysteresis information  
pertaining to the light source is stored; and  
storing means for storing in the first storage means  
hysteresis information including the optimal recording power  
10 and a light emission time of the light source at said optimal  
recording power, said storing means being realized when the  
choice of not changing the optimal recording power is selected  
by the selection means.

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16. The information recording apparatus as claimed in  
claim 14, further comprising:

20 type information obtaining means for obtaining type  
information of the information recording medium; and  
second storage means storing information on at least one  
type of information recording medium of which a power margin  
extends over a predetermined value in the vicinity of the  
25 threshold value; wherein

the choices further include a choice of changing the optimal recording power to the predetermined value in the vicinity of the threshold value; and

the selection means is arranged to select the choice of  
5 changing the optimal recording power to the predetermined value  
in the vicinity of the threshold value when the type  
information of the information recording medium obtained by the  
type information obtaining means corresponds to a type of  
information recording medium stored in the second storage means.

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17. The information recording apparatus as claimed in  
15 claim 14, further comprising notification means for notifying  
an external apparatus of a determination result of the  
determination means.

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18. An information recording system for recording  
information on an information recording medium, comprising:  
an information recording apparatus that is adapted to  
25 record information on the information recording medium using an

optical beam emitted from a light source, said apparatus including:

recording power obtaining means for obtaining an optimal recording power of the light source based on at least one of a  
5 result of test writing on the information recording medium and a result of receiving reflected light from the information recording medium while recording information;

determination means for determining whether the optimum recording power exceeds a preset threshold value;

10 selection means for selecting according to a predetermined selection criterion at least one of a plurality of choices including a choice of not changing the optimal recording power, said selection means being realized when it is determined by the determination means that the optimal recording power  
15 exceeds the threshold value; and

establishing means for establishing a recording condition based on the selected choice; said system further comprising:

an information processing apparatus that is adapted to control said information recording apparatus.

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19. The information recording system as claimed in claim  
25 18, wherein:

the information processing apparatus includes a display unit that is adapted to display the choices including the choice of not changing the optimal recording power when the optimal recording power exceeds the threshold value, an input 5 unit for selecting at least one of the choices displayed by the display unit, and a notification unit for notifying the information recording apparatus of the choice selected at the input unit.